15W

DC-DC Converters

- ✔ Single and Triple Output Models
- ✔ Up to 1500V Input/Output Isolation
- ✔ 2:1 Input Voltage Ranges
- ✔ Pi Input Filters—Built-in EMI Suppression
- ✔ UL/CSA/EN Safety Approvals
- ✔ Tightly Regulated
- ✔ Short-Circuit/Over-Voltage Protected
- ✔ Remote Shutdown on Triple Output Models
- ✔ Six-Sided Copper Case
- ✔ 2"×2"×0.4" (51mm×51mm×10.2mm)
- ✔ 2-Year Warranty
- ✔ 300,000-Hour Minimum MTBF

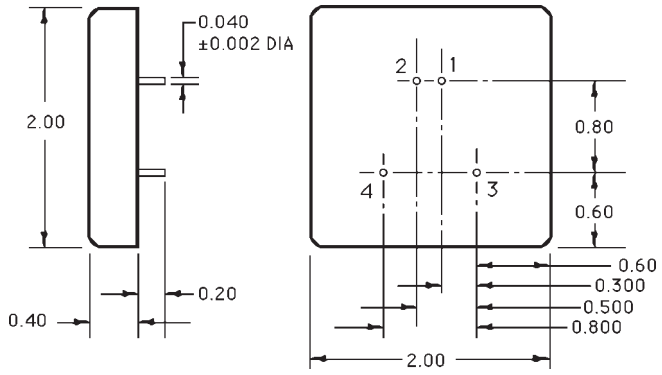
Characteristics

EMI Suppression.....Pi input filter, standard.
Inrush Current.....15A, peak, 25 µs.
Continuous Output Power.....15W, total. Maximum output current values for individual outputs of triple output models appear in the ratings table.
Minimum Load Requirement.....HD1-15, none. HD3-15 models, 0.5A on 5V output, 0.05A on auxiliary outputs.
Isolation Voltage.....HD1-15 models, 1500V, input to output, for one minute. HD3-15, models, 500V, input to output, for one minute.
Output Voltage Tolerance.....HD1-15, ±1%.
HD3-15, 5V output, ±1%.
HD3-15, auxiliary outputs, ±3%.
Output Noise and Ripple.....3.3V and 5V outputs, 50 mV_{pp}, max.
12V and 15V outputs, 100 mV_{pp}, max.
(See Note 2.)
Short-Circuit Protection.....Cycle-by-cycle current limiting.
Over-Voltage Protection.....HD1-15, 125% of rated output voltage, typical.
HD3-15 (5V output only), 6.0V, typical.
Reverse Voltage Protection .....Internal shunt diode.
Transient Response.....200 µs recovery after half-load to full load step change to within 1% of the regulation band with no more than 5% deviation.
Frequency of Operation .....150 kHz.
Remote Shutdown .....HD3-15, TTL-compatible.
ON = 2.4V to $V_{IN(MAX)}$ or open circuit;
OFF = 0.8V or less.
Temperature Range .....-25°C to +85°C. De-rate 3%/°C from +70°C to +85°C.
Temperature Coefficient.....±0.02%/°C over the entire operating temperature range.
Relative Humidity .....0 to 95%, non-condensing.
Altitude .....0 to 10,000 feet.
Cooling.....Convection cooling is adequate. Moving air is recommended for operation in a confined area.
Storage Temperature .....-40°C to +100°C.
Storage Humidity .....0 to 95%, non-condensing.
Mean Time Between Failures ...>300,000 hours. (See Note 4.)

Model	Input Voltage Min. (V)	Nom. (V)	Max. (V)	Nominal Input Current (A)	DC Output Output	(V)	Max. Output Current (A)	Output Voltage Tolerance	Line/ Load Reg.	Efficiency
DC-DC 15W Singles										
HD1-15-3.3A	9.0	12	18	1.70	V1	3.3	4.50	0.3%	0.5%	73%
HD1-15-3.3B	18	24	36	0.80	V1	3.3	4.50	0.3%	0.5%	77%
HD1-15-3.3C	36	48	75	0.40	V1	3.3	4.50	0.3%	0.5%	77%
HD1-15-5A	9.0	12	18	1.70	V1	5.0	3.00	0.3%	0.5%	74%
HD1-15-5B	18	24	36	0.80	V1	5.0	3.00	0.3%	0.5%	78%
HD1-15-5C	36	48	75	0.40	V1	5.0	3.00	0.3%	0.5%	78%
HD1-15-12A	9.0	12	18	1.70	V1	12	1.25	0.3%	0.5%	74%
HD1-15-12B	18	24	36	0.80	V1	12	1.25	0.3%	0.5%	78%
HD1-15-12C	36	48	75	0.40	V1	12	1.25	0.3%	0.5%	78%
HD1-15-15A	9.0	12	18	1.70	V1	15	1.00	0.3%	0.5%	74%
HD1-15-15B	18	24	36	0.80	V1	15	1.00	0.3%	0.5%	78%
HD1-15-15C	36	48	75	0.40	V1	15	1.00	0.3%	0.5%	78%
DC-DC 15W Triples										
					V1	5.0	3.0	0.3%	0.5%	
HD3-15-1A	9.0	12	18	1.67	V2	+12	0.3	0.5%	3.0%	75%
					V3	- 12	0.3	0.5%	3.0%	
					V1	5.0	3.0	0.3%	0.5%	
HD3-15-1B	18	24	36	0.78	V2	+12	0.3	0.5%	3.0%	80%
					V3	- 12	0.3	0.5%	3.0%	
					V1	5.0	3.0	0.3%	0.5%	
HD3-15-1C	36	48	75	0.39	V2	+12	0.3	0.5%	3.0%	81%
					V3	- 12	0.3	0.5%	3.0%	
					V1	5.0	3.0	0.3%	0.5%	
HD3-15-2A	9.0	12	18	1.67	V2	+15	0.3	0.5%	3.0%	75%
					V3	- 15	0.3	0.5%	3.0%	
					V1	5.0	3.0	0.3%	0.5%	
HD3-15-2B	18	24	36	0.78	V2	+15	0.3	0.5%	3.0%	80%
					V3	- 15	0.3	0.5%	3.0%	
					V1	5.0	3.0	0.3%	0.5%	
HD3-15-2C	36	48	75	0.39	V2	+15	0.3	0.5%	3.0%	81%
					V3	- 15	0.3	0.5%	3.0%	

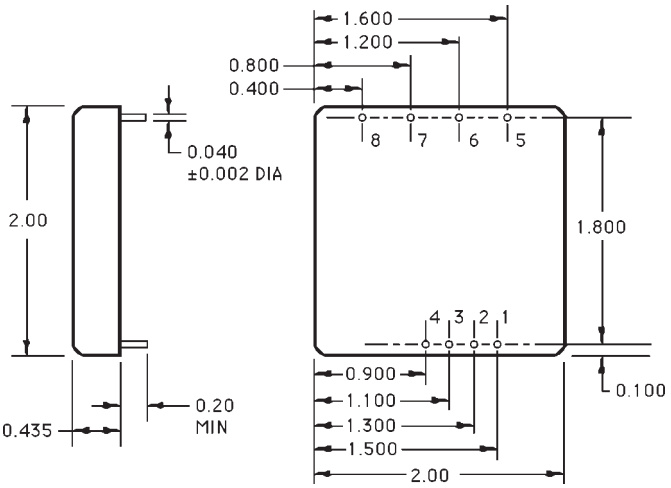
15W

DC-DC Converters



HD1-15 SERIES

A. Dimensions shown are in inches.
B. Tolerances = 0.00 ±0.02 inch.
0.000 ±0.005 inch.
C. Module weight = 2.5 oz. (71g).



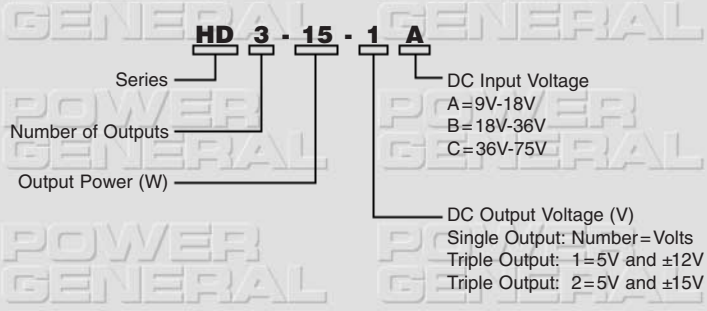
HD3-15 SERIES

A. Dimensions shown are in inches.
B. Tolerances = 0.00 ±0.02 inch.
0.000 ±0.005 inch.
C. Module weight = 2.5 oz. (71g).

Pin-Out

Pin	HD1-15	HD3-15
1	+VIN	Remote On/Off
2	- VIN	N/C
3	+V1OUT	- VIN
4	- V1OUT	+VIN
5	N/A	V3OUT
6	N/A	Return
7	N/A	V1OUT
8	N/A	V2OUT

Model Selection Guide



Notes

1. Use of an external input line fuse is recommended:
For models with 12V input, use a 4.0A/125V fuse.
For models with 24V input, use a 2.0A/125V fuse.
For models with 48V input, use a 1.0A/125V fuse.
2. Peak-to-peak and RMS metering equipment must have a 20 MHz frequency response with probes and cables that maintain a frequency response of 20 Hz to 20 MHz. Output ripple and spikes are measured directly at the output terminals of the converter with a ceramic capacitor. The probe ground band must make direct contact with the output return or the common terminal of the converter under test to prevent erroneous noise measurements.
3. All measurements are at nominal input, full load, and +25°C unless otherwise specified.
4. Mean Time Between Failures is calculated using the parts stress method in MIL-HDBK 217F (ground benign, T_A = +25°C).
5. HD1-15 models 5A, 5B, 5C, 12A, 12B, 12C, 15A, 15B, and 15C are approved to UL1950 (File E140439) and to CAN/CSA22.2 No. 234 (File LR52335). HD1-15 models 5A, 5B, 12A, 12B, 15A and 15B are approved to UL1950 (File E140439) and to EN60950/IEC950/DIN VDE 0805 (TÜV File R9679045).